Smart Grid

Developing A Sustainable Energy Future

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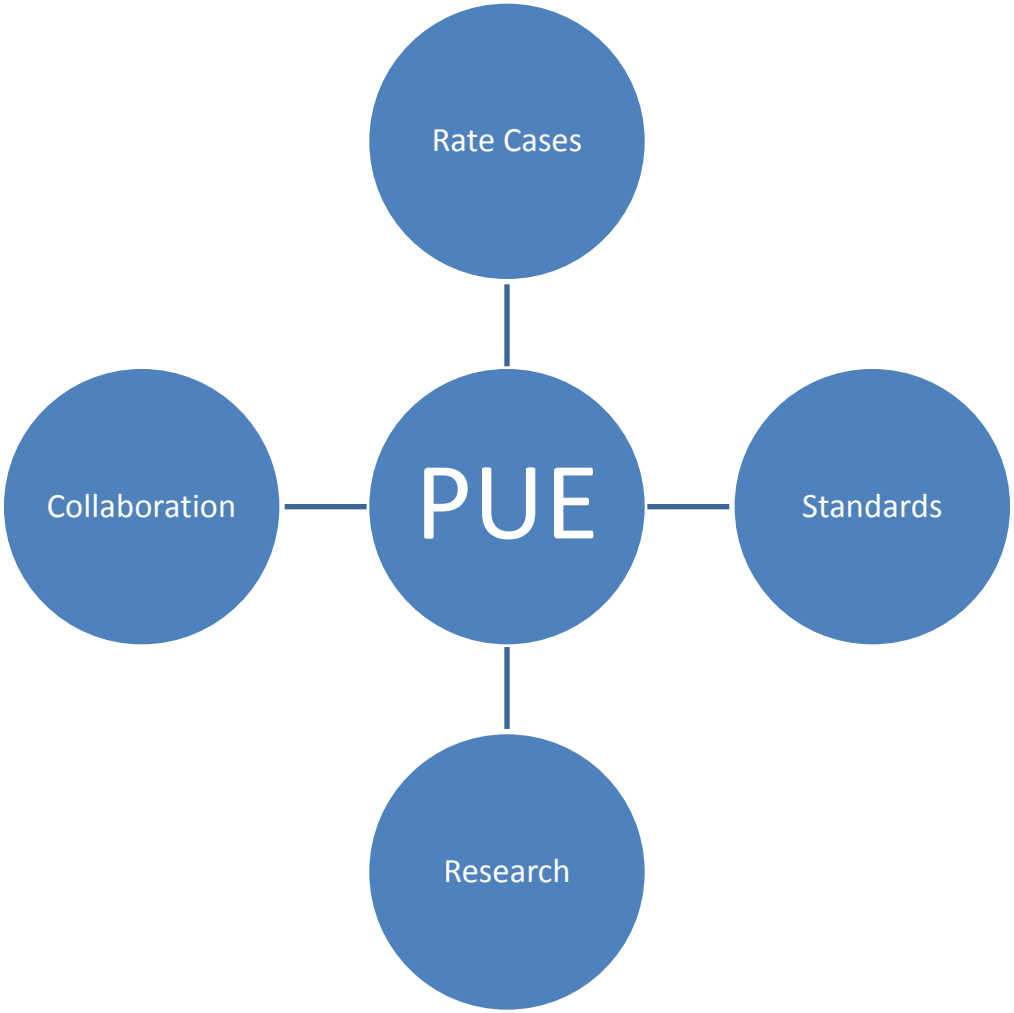
Michigan Public Service Commission

6-22-2012

About Me



Current Electric Grid

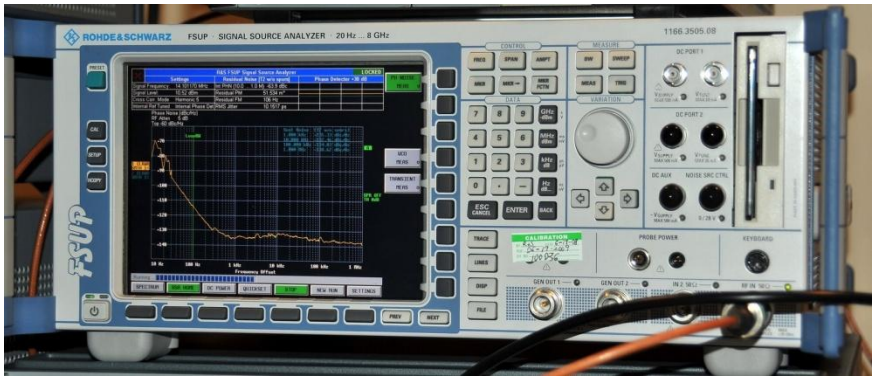
Current Electric Grid

Our current electric system operates as a one way broadcast of electricity from predominately coal burning power plants. Operators estimate demand on a day ahead basis and dispatch power plants to match supply with the estimated customer demand.

Current Electric Grid

Current Grid Customers

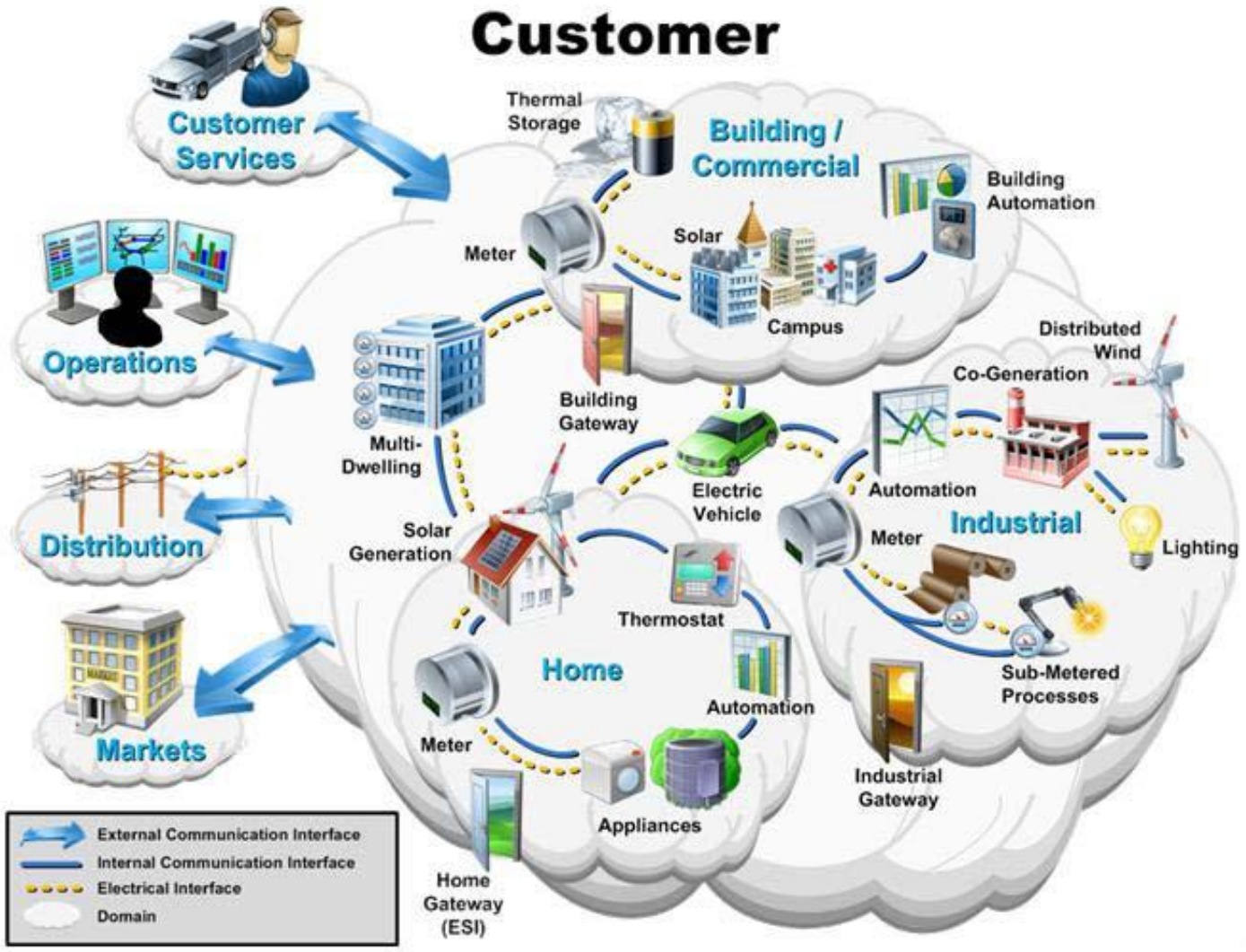
Smart Grid

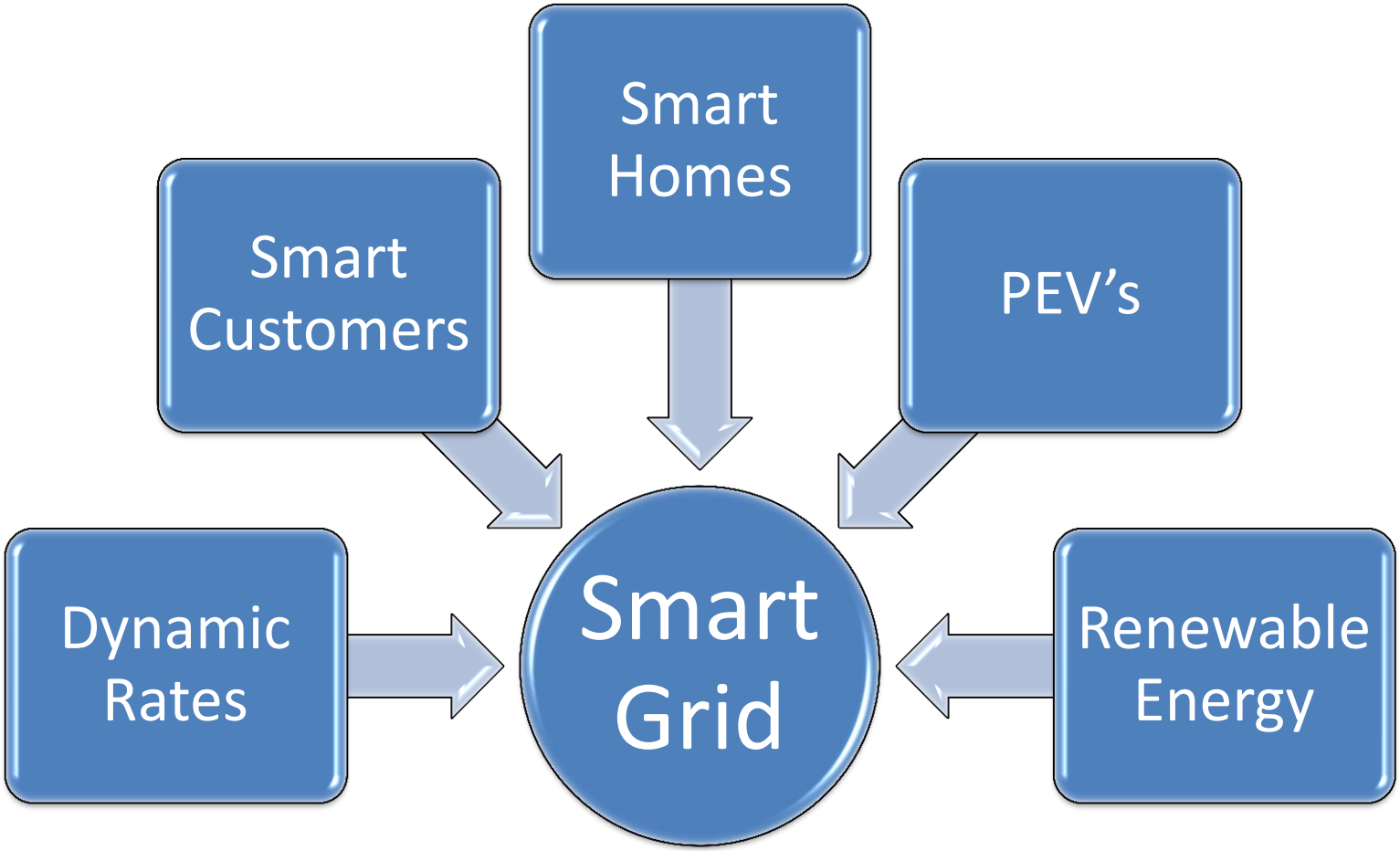

ROHDE&SCHWARZ
FSUP SIGNAL SOURCE ANALYZER 20 Hz ... 8 GHz
1166.3505.08

00000
CL200 240V 3W TYPE CVS0D 30TA 1.0Kh
CenterPoint Energy
METER NUMBER
Itron
WATTHOUR METER

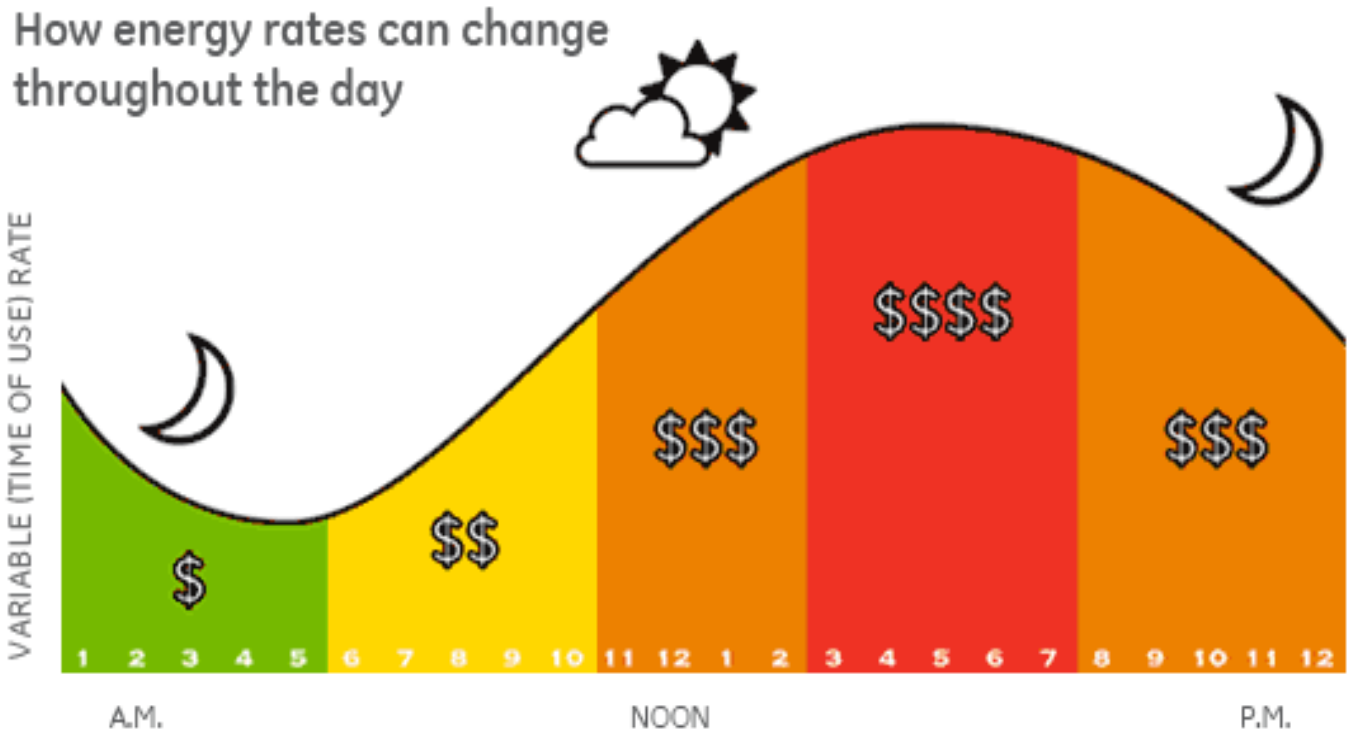
Smart Grid

Smart Grid generally refers to the process of integrating communications technology and advanced hardware into the existing electrical power grid to improve reliability, power quality and overall efficiency. This process will provide each component of the grid the ability to "talk" and "listen" in order to improve electricity delivery from the utility companies to end consumers.


Customer
Customer Services
Operations
Distribution
Markets
Thermal Storage
Building / Commercial
Building Automation
Meter
Solar
Campus
Distributed Wind
Co-Generation
Building Gateway
Multi-Dwelling
Electric Vehicle
Automation
Industrial
Solar Generation
Meter
Lighting
Thermostat
Home
Automation
Sub-Metered Processes
Meter
Industrial Gateway
Appliances
Home Gateway (ESI)
External Communication Interface
Internal Communication Interface
Electrical Interface
Domain


Smart Homes
Smart Customers
PEV's
Dynamic Rates
Smart Grid
Renewable Energy

Dynamic Rates

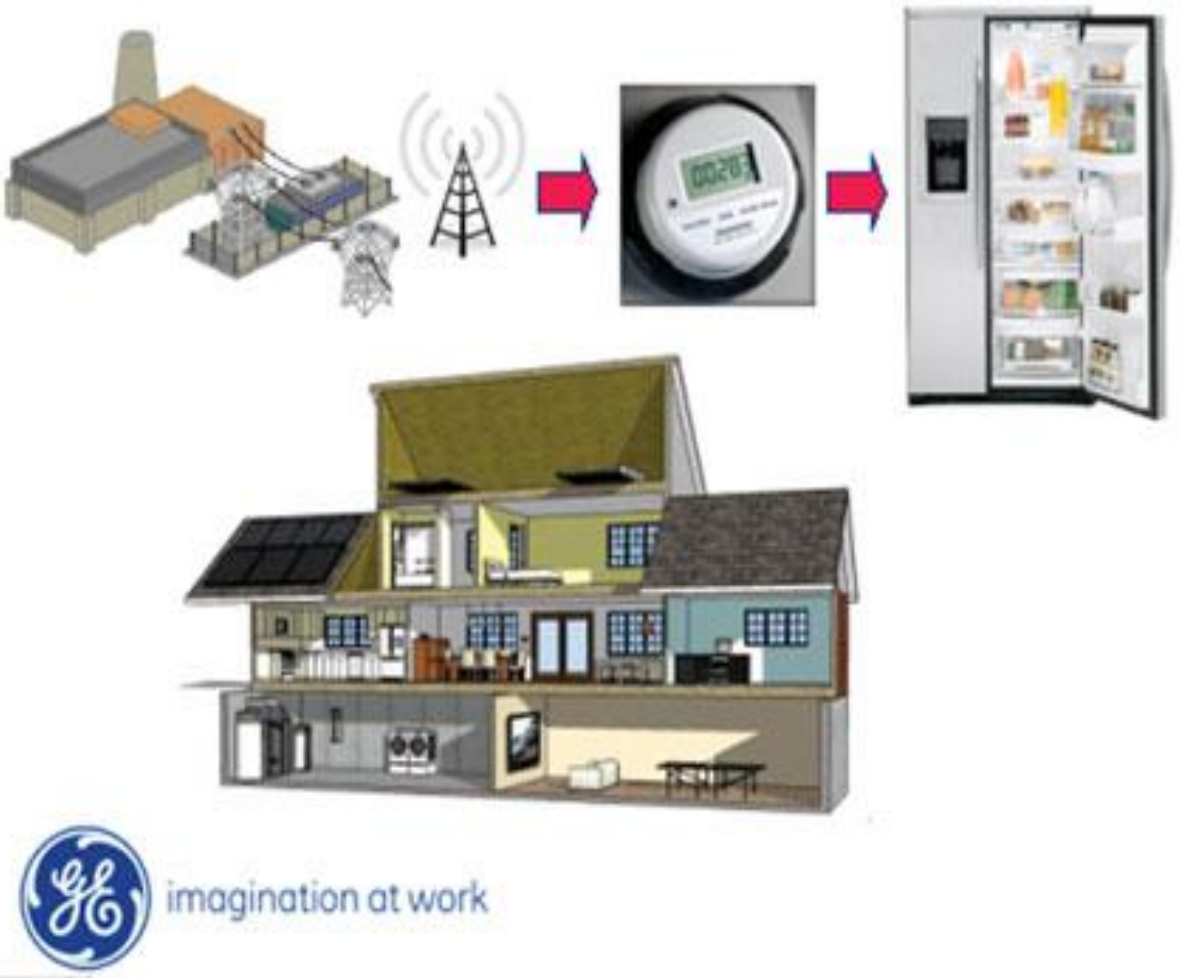


Smart Customer

- Educated
- Engaged

Smart Home

- Smart Appliance's
  - Water Heater
  - Refrigerator
  - Washer Dryer



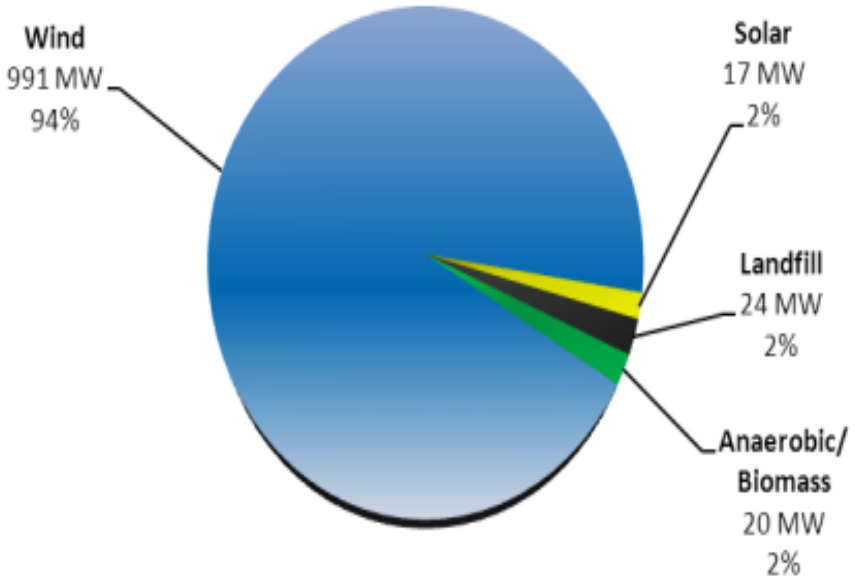
Smart Home

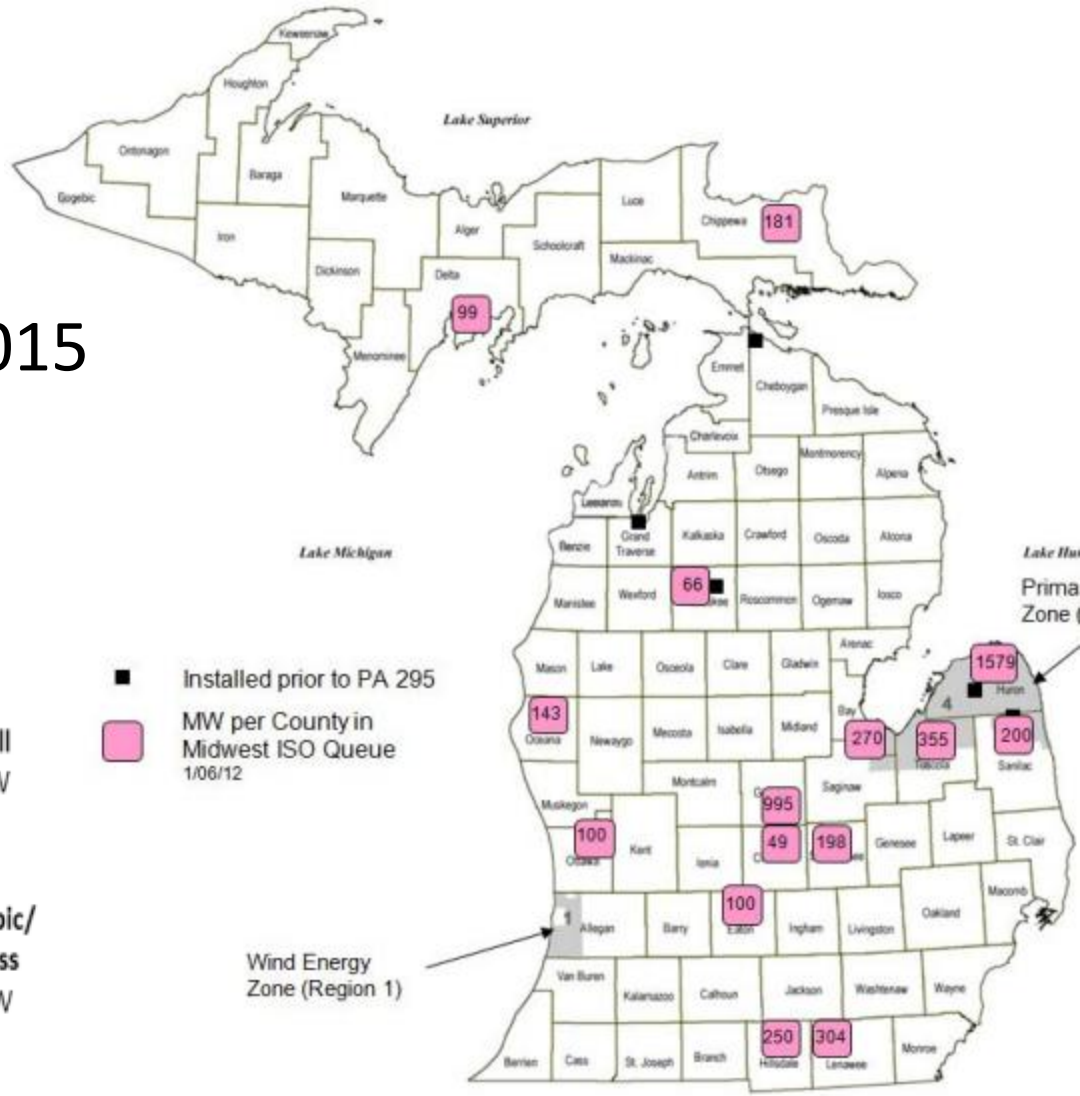
- Renewable Energy
  - Fuel Cells
  - Solar Panels
  - Energy Storage

Plug In Electric Vehicles

Renewable Energy

- Public Act 295
  - 10% Renewable by 2015

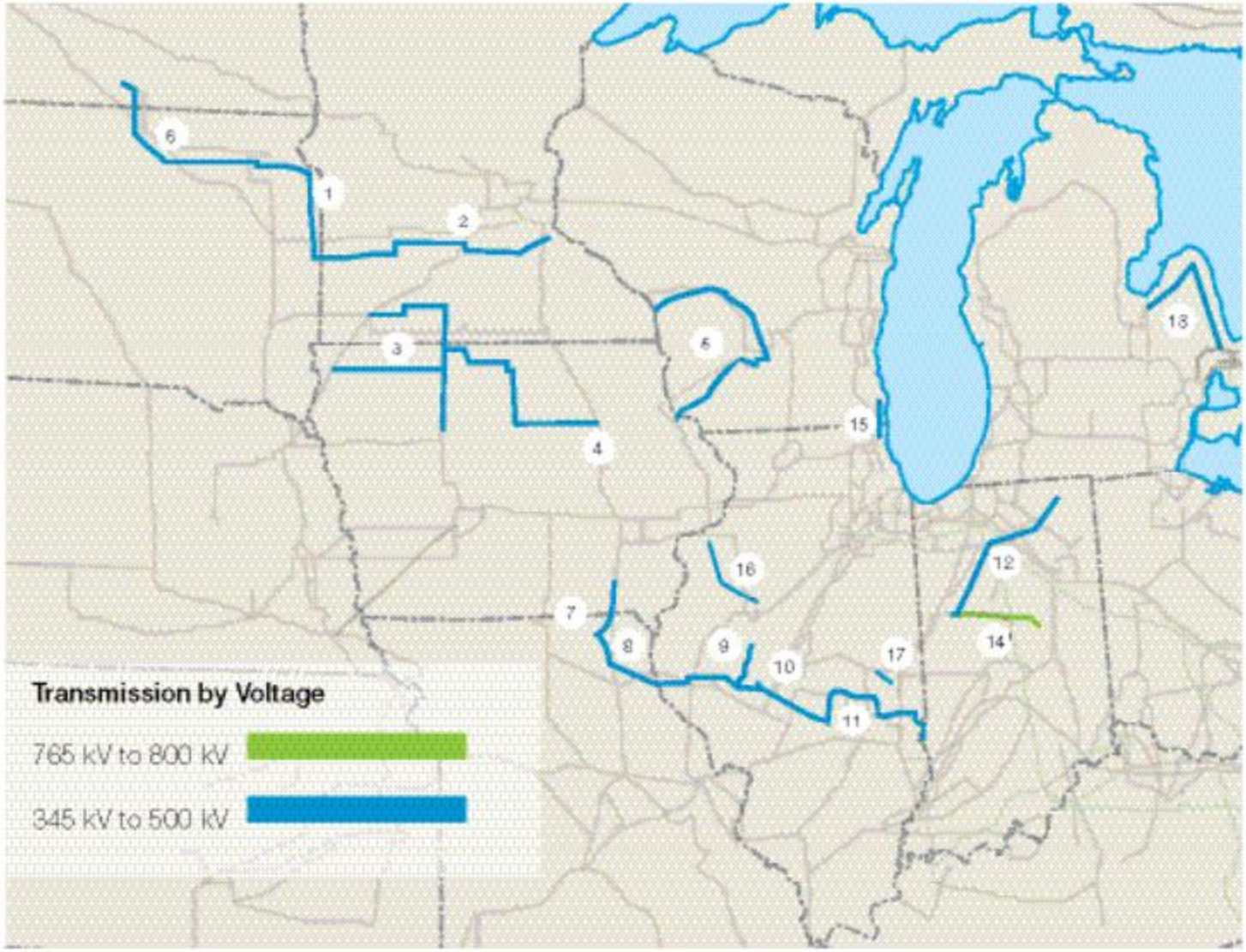




Intermittent Energy Resources

- An **intermittent energy source** is any source of energy that is not continuously available due to some factor outside direct control.

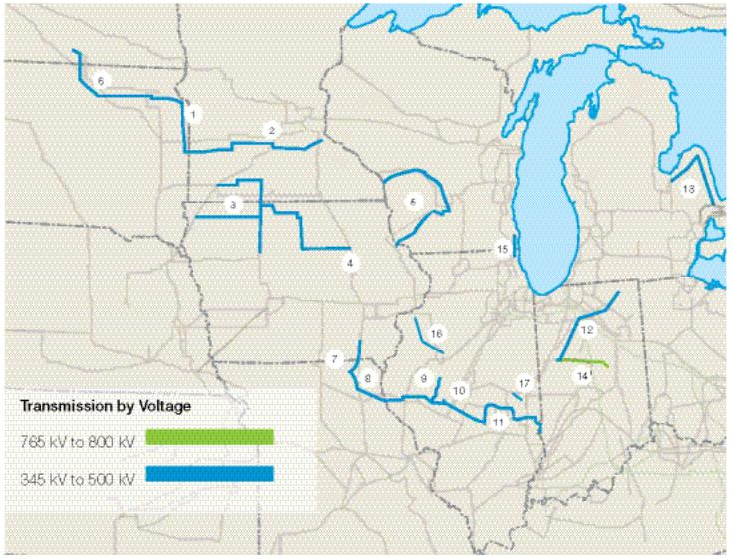
Transmission



Environment

- Cross State Air Pollution Rule (CSAPR)
- Mercury and Air Toxics Standards (MATS)
- CO_2 Emission Standards

How a Smart Grid Helps



Smart Grid Deployments In MI

Detroit Edison

- $84 Million DOE Grant
- ~ 800,000 Smart Meter Installations in Southeast Michigan

Smart Grid Deployments In MI

Consumers Energy

- ~ 50,000 Smart Meter Installations in Muskegon Area by end of 2012

Pilot Programs

Questions?

www.michigan.gov/mpsc